a5 cont

30, and light incident on the image plane is focused on the image plane. Furthermore, the image plane of the camera is set to the focal plane of the imaging optical path 17a. That is, the photo mask 30 is parfocal with the image plane of the camera.

IN THE CLAIMS:

Please cancel claims 5 and 10. Please amend the following claims:

1. (Amended) An inverted microscope comprising:

an objective lens disposed below a sample;

an image-forming lens for focusing observation light from said objective lens;

a lens-barrel disposed on the front side of the microscope;

a reflecting mirror for directing transmitted light passing through said image-forming lens to the lens-barrel on the front side of the microscope;

an optical element disposed between said image-forming lens and said reflecting mirror, for directing light from said image-forming lens to the backside of the microscope to form an imaging optical path, which backside is the opposite side of the front side of the microscope on which said lens-barrel is disposed;

a6

an image-taking port for mounting an imaging device in the imaging optical path in the back side of the microscope so that the image plane of said imaging device substantially corresponds to the focal plane of the image-forming lens;

a light source for reflected illumination of the sample through the objective lens;

a first reflected illuminator coupled to the light source, for directing light from the light source;

a relay tube coupled to the first reflected illuminator, having a mirror inside for deflecting light emitted from the light source and passed through the first reflected illuminator;

a second reflected illuminator coupled to the relay tube for directing light deflected on the mirror in the relay tube to inside of the microscope; and

a fluorescent cube disposed between the objective lens and the image-forming lens, for directing light passed through the second reflected illuminator to the objective lens from the backside of the microscope which backside is the opposite side of the front side on which the lens-barrel is disposed.

2. (Amended) The inverted microscope according to claim 1, further comprising:

a relay lens for relaying a primary image formed by the image-forming lens; and

an adjusting device for adjusting a focusing position with respect to the image plane of the imaging device.

3. (Amended) The inverted microscope according to claim 2, wherein said adjusting device is able to adjust the focusing position in the direction of the optical axis and a direction perpendicular to the optical axis.

4. (Amended) The inverted microscope according to claim 1, further comprising:

viewing optics disposed in an observation optical path, and including a photo mask; and

an adjusting device attached to said image-taking port, being able to adjust said imaging device by moving said imaging device in the direction of the optical axis of said imaging optical path and the direction perpendicular to said optical axis, and making said photo mask coincide with a central portion and image plane of said imaging device.

6. (Amended) The inverted microscope according to claim 1, further comprising:

a first optical element disposed in an observation optical path along the optical axis of said objective lens, for directing said excitation light from the light source to the sample, and for transmitting observation light from the sample;

a second light source for emitting a laser beam incident on the sample via said objective lens;

a second optical element disposed in said observation optical path behind said first optical element, for directing said laser beam from said second light source to the sample, and for transmitting said observation light from the sample and directing said observation light to said first optical element;

an image-forming lens for said laser beam disposed between said second light source and said second optical element, for focusing said laser beam on the sample; and

a lens holder for supporting said image-forming lens for said laser beam to enable movement of said image-forming lens for said laser beam in a direction of an optical axis of said laser beam, said lens holder adjusting a position of said image-forming lens for said laser beam so that said laser beam is focused on an appropriate position for said objective lens.

7. (Amended) The inverted microscope according to claim 6, further comprising:

a moving mechanism in which said first optical element and said second optical element are disposed, for removing said first optical element and said second optical element from said observation optical path at the same time.

8. (Amended) The inverted microscope according to claim 7, wherein:

said first optical element comprises a total reflection prism,

said moving mechanism holds said first optical element and a total transmission prism at a position corresponding to the imaging optical path with said second optical element, and selectively switches said first optical element and said total transmission prism through a movement of said moving mechanism,

light of the observation optical path is directed to the lens-barrel through a reflection on a reflection element after passing through the total transmission prism, and

in said moving mechanism, the distance Y which is the distance between said total reflection prism and said total transmission prism is set to be longer than a half of the diameter X which is the maximum diameter of a light flux of said observation optical path.

9. (Amended) An inverted microscope comprising:

an objective lens for magnifying an image of a sample, disposed below the sample;

a first light source for emitting excitation light to illuminate a sample via said objective lens;

a second light source for emitting a laser beam to illuminate the sample via said objective lens;

an image-forming lens for said laser beam for focusing said laser beam on the sample via said objective lens;

a lens holder for supporting said image-forming lens for said laser beam, the lens holder enables said image-forming lens for said laser beam to move in a direction of an optical axis of said laser beam for adjusting a position of said image-forming lens for said laser beam so that said laser beam is focused on an appropriate position for said objective lens;

a first optical element disposed in an observation optical path along the optical axis of said objective lens, for directing said excitation light from the first light source to the sample, and for transmitting observation light from the sample;

a second optical element disposed in said observation optical path behind said first optical element, for directing said laser beam from said second light source to the sample, and for transmitting said observation light from the sample;

a third optical element for directing light passed through the second optical element to an imaging optical path;

a moving mechanism in which said second optical element and third optical element are mounted, for removing said second optical element and said third optical element from said observation optical path at the same time; and wherein

the image-forming lens for said laser beam is disposed between said second light source and said second optical element.

11. (Amended) The inverted microscope according to claim 9, wherein

said third optical element comprises a total reflection prism,

said moving mechanism holds said third optical element and a total transmission prism with said second optical element, and selectively switches said third optical element and said total transmission prism in said observation optical path through a movement of said moving mechanism,

light of the observation optical path is directed to the lens-barrel through a reflection on a reflection element after passing through the total transmission prism, and

in said moving mechanism, the distance Y which is the distance between said total reflection prism and said total transmission prism is set to be longer than a half of the diameter X which is the maximum diameter of a light flux of said observation optical path.